

**TOWN OF PLAINVILLE  
STORMWATER MANAGEMENT REGULATIONS**

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## **Section 1. Purpose**

The purpose of these Stormwater Regulations is to protect, maintain and enhance the public health, safety, general welfare, and environment by establishing minimum requirements and procedures to control the adverse effects of increased runoff, decreased ground water recharge, erosion and sedimentation, and nonpoint source pollution associated with new development and redevelopment of land, as identified in the Town of Plainville Stormwater Management Bylaw.

Development of land including loss of vegetative cover to introduce impervious surfaces, regrading, and other land use changes, permanently alter the hydrologic system of local watersheds by decreasing transpiration and infiltration and by increasing stormwater runoff rates and volumes, causing an increase in flooding, stream channel erosion, and sediment transport and deposition. This additional runoff also contributes to increased nonpoint source pollution and degradation of receiving waters.

Stormwater management systems that are properly designed utilizing low impact design (LID) and green infrastructure (GI) techniques, and appropriate best management practices (BMPs), can better simulate the natural (existing) hydrologic condition and reduce adverse impacts.

During the construction process, soil is often exposed for periods of time and most vulnerable to erosion by wind and water. The eroded soil endangers water resources by reducing water quality and causing the siltation of valuable wetland resources including swamps, streams, rivers, lakes and aquatic habitat for fish and other desirable species.

The impacts of construction and post-development stormwater runoff quantity and quality can adversely affect public safety, public and private property, surface water drinking water supplies, groundwater resources including drinking water supplies, recreation, aquatic habitats, fish and other aquatic life, property values and other uses of lands and waters.

These Stormwater Regulations have been established to provide for the regulation of project design, construction and post-development stormwater runoff for the purpose of protecting local water resources from degradation. It is in the public interest to regulate construction and post-development stormwater runoff discharges in order to control and minimize increases in stormwater runoff rates and volumes, soil erosion and sedimentation, stream channel erosion, and nonpoint source pollution associated with construction site and post-development stormwater runoff.

## **Section 2. Definitions**

Pertinent definitions are provided in Section 2 of the Town of Plainville Stormwater Management Bylaw.

## **Section 3. Authority**

- A. The Regulations have been adopted by the Stormwater Authority in accordance with the Town of Plainville Stormwater Management Bylaw.
- B. Nothing in these Regulations is intended to replace or be in derogation of the requirements of the Town of Plainville Zoning Bylaw, Wetlands Protection Bylaw, Subdivision Control Law, Board of Health or any other Regulations adopted thereunder.

## **Section 4. Administration**

- A. The Conservation Commission is designated as the Stormwater Authority under the Stormwater Management Bylaw, and shall administer, implement and enforce these regulations. Any powers granted to, or duties imposed upon, the Stormwater Authority may be delegated in writing by the Stormwater Authority to its employees or agent(s).
- B. Waiver. Stormwater Authority may waive strict compliance with any requirement of these regulations promulgated hereunder, where:
  - (1) such action is allowed by federal, state and local statutes and/or regulations,
  - (2) is in the public interest; and
  - (3) is not inconsistent with the purpose and intent of the Stormwater Management Bylaw and these regulations.
- C. The Stormwater Authority may amend these regulations after holding a public hearing. Notice of the time, place and subject matter shall be published in a newspaper of general circulation in the Town once, at least seven (7) days prior to the hearing date.

## **Section 5. Applicability**

- A. The Bylaw and these regulations shall apply to all activities that result in disturbance of 10,000 square feet or more. Except as authorized by the Stormwater Authority in a Land Disturbance Review or Permit, or as otherwise provided in these regulations, no person shall perform any activity that results in disturbance of 10,000 square feet of land or more.
- B. Exemptions from these regulations are detailed in the Stormwater Management Bylaw, Article II, Section 2(D) and Article III, Section (1)(B).
- C. There are two levels of review based on the amount and use of the proposed land to be disturbed as part of a single project. They are as follows:
  - (1) An Administrative Land Disturbance Review is required for projects disturbing between 10,000 square feet and one-half acre (21,780 square feet) of land. If the land disturbance is for a site where the land use is for higher potential pollutant loads, as defined in the Massachusetts Stormwater Management Standards, then a Land Disturbance Permit is required. Projects that the Stormwater Authority can reasonably expect will be part of a larger development that exceeds 21,780 sf. of

disturbance may be required to file for a Land Disturbance Permit.

(2) A Land Disturbance Permit is required for disturbance of one-half acre (21,780 square feet) or more of land, and for lands of higher potential pollutant loads as listed above.

## **Section 6. Administrative Land Disturbance Review Procedure**

A. Application. A completed application for an Administrative Land Disturbance Review shall be filed with Stormwater Authority. Approval must be obtained prior to the commencement of land disturbing activity within limits for an Administrative Review defined above. The Administrative Land Disturbance Review Application package shall include:

- (1) A completed Application Form with original signatures of all owners.
- (2) Sufficient information for the Stormwater Authority to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the applicant to reduce adverse impacts from stormwater runoff during construction, and on a long-term basis.
- (3) Narrative describing the proposed work including existing site conditions, proposed work and methods to mitigate any stormwater impacts.
- (4) An operation and maintenance plan to inspect, properly maintain and repair installed BMPs after project completion to ensure that they are functioning according to manufacturer and/or design specifications for the life of the BMP.
- (5) Three (3) copies of the plan, that includes:
  - (a) Existing site features including structures, pavements, plantings, and stormwater management systems, etc.
  - (b) Proposed work including proposed stormwater management systems and limits of disturbance.
  - (c) Basic erosion and sedimentation controls (i.e. erosion control barrier and inlet protection devices where appropriate).
- (6) An electronic file, in pdf format, of all submitted material.
- (7) The design should minimize disturbance of areas susceptible to erosion and sediment loss.
- (8) The design should use Low Impact Development techniques where adequate soil, groundwater and topographic conditions allow. These may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain gardens), and infiltration systems.
- (9) An illicit discharge compliance statement certifying that there are no existing or new illicit discharges from this property is required.
- (10) Payment of the application and review fees.

B. The Stormwater Authority may delegate the review, and approval or denial, of an Administrative Land Disturbance Review permit to its authorized agent.

- C. Entry. Filing an application for a permit grants the Stormwater Authority, or its agent, permission to enter the site to verify the information in the application and to inspect for compliance with permit conditions.
- D. Information requests. The applicant shall submit all additional information requested by the Stormwater Authority to issue a decision on the application.
- E. Action by Stormwater Authority.

Within 21 days of receipt of a complete application, the Stormwater Authority shall either:

- 1) Approve the Administrative Land Disturbance Review Application if it finds that the proposed plan will protect the MS4 system, water resources, not cause or contribute to a violation of the State Water Quality standards, and meets the objectives and requirements of the Plainville Stormwater Management Bylaw and related regulations.
- 2) Approve the Administrative Land Disturbance Review Application with conditions, modifications or restrictions that the Stormwater Authority determines are required to ensure that the project will protect water resources and meets the objectives and requirements of the Plainville Stormwater Management Bylaw and related regulations.
- 3) Require submission of a Land Disturbance Permit Application if the project will disturb land beyond Administrative Review thresholds, or in the opinion of the Stormwater Authority requires more extensive review.
- 4) Disapprove the Land Disturbance Permit Review and deny the permit if it finds that the proposed plan will not protect water resources or fails to meet the objectives and requirements of these regulations.
- 5) Disapprove the Land Disturbance Permit Review “without prejudice” where an applicant fails to provide requested additional information or review fees that in the Stormwater Authority’s opinion are needed to adequately describe or review the proposed project.

Requests by the Stormwater Authority, or its Agent, for additional information needed to properly review the project shall restart the 21-day time period listed above.

- F. An appeal of an Administrative Land Disturbance Review decision shall be made by filing for a full Land Disturbance Permit as described in Section 7.
- G. Fee Structure. Each application must be accompanied by the appropriate application fee as established by the Stormwater Authority. Applicants shall pay review fees as determined by the Stormwater Authority sufficient to cover any expenses connected with the review of the Land Disturbance Review Application before the review process commences. The Stormwater Authority is authorized to retain a Registered Professional Engineer or other professional consultant to advise the Stormwater Authority on any or all aspects of the Application.
- H. Project Changes. The permittee, or their agent, must notify the Stormwater Authority in writing of any change or alteration of a land-disturbing activity authorized in an

Administrative Land Disturbance Review approval before any change or alteration occurs. If the Stormwater Authority determines that the change or alteration is significant, based on the thresholds listed above, the design requirements listed in Section 11, and accepted construction practices, the Stormwater Authority may require that a Land Disturbance Permit application be filed. If any change or alteration from the Administrative Land Disturbance Review approval occurs during any land disturbing activities, the Stormwater Authority may require the installation of interim erosion and sedimentation control measures before approving the change or alteration.

- I. Final Approval. Final approval, if granted, shall be endorsed on the Stormwater Administrative Land Disturbance Review approval form by the Stormwater Authority (or by the signature of the person officially authorized by the Stormwater Authority). Applicants may be required to submit full or partial as-built plans prior to Final Approval if deemed necessary by the Stormwater Authority or its Agent.
- J. Expiration: A Stormwater Administrative Land Disturbance Review approval shall be valid for three years from the date of approval.

## **Section 7. Land Disturbance Permit and Procedure**

- A. Permit Required: A permit must be obtained prior to the commencement of land disturbing activity that may result in the disturbance of an area of one-half acre (21,780 sq. ft.) or more of land, if the proposed use is listed as a land use of higher potential pollutant loads as defined in the Massachusetts Stormwater Management Standards, or for projects that the Stormwater Authority can reasonably expect will be part of a larger development that exceeds 21,780 sf. of disturbance.
- B. Application. A completed application for a Land Disturbance Permit shall be filed with Stormwater Authority. The Land Disturbance Permit Application package shall include:
  - (1) A completed Application Form with original signatures of all owners;
  - (2) A list of abutters within 300 feet of the property, certified by the Assessor's Office;
  - (3) Three (3) copies of the:
    - (a) Project narrative
    - (b) Stormwater calculations
    - (c) Stormwater Management Plan
    - (d) Erosion and Sediment Control Plan
    - (e) Operation and Maintenance Plan
  - (f) An electronic file, in pdf format, of all submitted material.
  - (g) Illicit discharge compliance statement signed by the Owner and Registered Professional Engineer certifying that there are no existing or new illicit discharges from this property
  - (4) Payment of the application, review and advertising fees; and,
  - (5) One (1) copy each of the Application Form and the list of abutters filed with the Town Clerk.

- C. Abutter Notification: Any person filing a Land Disturbance Permit with the Stormwater Authority shall at the same time give written notice thereof, by certified mail (return receipt requested), certificates of mailing, or provide proof of hand delivery, to all abutters within 300 feet of the property line. The applicant shall provide notification at the mailing addresses shown on the most recent applicable tax list from the municipal assessor. The notice shall state a brief description of the project and the date of any public hearing, if known. Mailing at least 7 days prior to the public hearing shall constitute timely notice. An affidavit of the person providing such notice, copy of the notice mailed or delivered, shall be filed with the Stormwater Authority.
- D. Information requests. The applicant shall submit all additional information requested by the Stormwater Authority to issue a decision on the application.
- E. Determination of Completeness: The Stormwater Authority, or its designated agent, shall make a determination as to the completeness of the application and adequacy of the materials submitted. At the discretion of the Stormwater Authority, or its agent, the review and/or hearing may not take place until the application has been found to be complete.
- F. Fee Structure. Each application must be accompanied by the appropriate application fee as established by the Stormwater Authority. Applicants shall pay review fees as determined by the Stormwater Authority to cover any expenses connected with the public hearing and review of the Land Disturbance Permit Application before the review process commences. The Stormwater Authority is authorized to retain a Registered Professional Engineer or other professional consultant to advise the Stormwater Authority on any or all aspects of the Application.
- G. Entry. Filing an application for a permit grants the Stormwater Authority, or its agent, permission to enter the site to verify the information in the application and to inspect for compliance with permit conditions.
- H. Other Boards. The Stormwater Authority shall notify the Town Clerk of receipt of the application, and shall provide an electronic pdf copy of the application package to the Planning Board, Board of Health and Department of Public Works.
- I. Public Hearing. The Stormwater Authority shall hold a public hearing within twenty-one (21) days of the receipt of a complete application and shall take final action within twenty-one (21) days from the time of the close of the hearing, unless such time is extended by agreement between the applicant and the Stormwater Authority. The Stormwater Authority shall make the application available for inspection by the public during business hours at the office of the Town of Plainville Conservation Commission.
- J. Action by the Stormwater Authority.

The Stormwater Authority may:

- (1) Approve the Land Disturbance Permit Application and issue a permit if it finds that the proposed plan will protect water resources and meets the objectives and requirements of this by-law;
- (2) Approve the Land Disturbance Permit Application and issue a permit with conditions, modifications or restrictions that the Stormwater Authority determines

are required to ensure that the project will protect water resources and meets the objectives and requirements of these regulations;

- (3) Disapprove the Land Disturbance Permit Application and deny the permit if it finds that the proposed plan will not protect water resources or fails to meet the objectives and requirements of these regulations.
- (4) Disapprove the Land Disturbance Permit Application “without prejudice” where an applicant fails to provide requested additional information or review fees that in the Stormwater Authority’s opinion are needed to adequately describe or review the proposed project.

K. Project Changes. The permittee, or their agent, must notify the Stormwater Authority in writing of any change or alteration of a land-disturbing activity authorized in a Land Disturbance Permit before any change or alteration occurs. If the Stormwater Authority determines that the change or alteration is significant, based on the design requirements listed in Section 11 and accepted construction practices, the Stormwater Authority may require that an amended Land Disturbance Permit application be filed. If any change or alteration from the Land Disturbance Permit occurs during any land disturbing activities, the Stormwater Authority may require the installation of interim erosion and sedimentation control measures before approving the change or alteration.

L. Final Approval. Final approval, if granted, shall be endorsed on the Stormwater Management Permit by the Stormwater Authority (or by the signature of the person officially authorized by the Stormwater Authority). Applicants may be required to submit full or partial as-built plans prior to Final Approval if deemed necessary by the Stormwater Authority or its Agent.

M. Expiration: A Stormwater Land Disturbance Permit shall be valid for three years from the date of approval.

## **Section 8. Stormwater Management Plan**

- A. The application for a Land Disturbance Permit shall include the submittal of a Stormwater Management Plan to the Stormwater Authority. This Stormwater Management Plan shall contain sufficient information for the Stormwater Authority to evaluate the environmental impact, effectiveness, and acceptability of the site planning process and the measures proposed by the applicant to reduce adverse impacts from stormwater runoff during construction, and post-construction in the long-term.
- B. The Plan shall be designed to meet the Massachusetts Stormwater Management Standards as further defined in the Massachusetts Stormwater Handbook and any additional standards required by these regulations or regulations adopted hereunder. To the extent that any project within the jurisdiction of these regulations is located in an area subject to one or more pollutant-specific Total Maximum Daily Loads (TMDLs), such project is required to implement structural and non-structural stormwater best management practices (BMPs) that are consistent with each such TMDL and its associated Waste Load Allocation (for point sources) and Load Allocation (for nonpoint sources). The U.S. EPA/MassDEP or Stormwater Authority may develop, publish and periodically revise one or more pollutant-specific guidance documents describing the geographic applicability of each TMDL and identifying BMPs that individually or in combination are considered to be consistent with the TMDL(s).

C. The Stormwater Management Plan shall fully describe the project in narrative, drawings, and calculations. It shall at a minimum include:

- (1) Contact Information. The name, address, telephone number and email of all persons having a legal interest in the property, and the tax reference number and parcel number of the property or properties affected;
- (2) Narrative describing:
  - (a) Purpose
  - (b) Methodologies and assumptions
  - (c) Existing and proposed uses and conditions
  - (d) Project impacts and mitigation techniques including:
    - i. Summary of proposed land area to be cleared, proposed impervious area, work within proximity of regulated wetland resource areas, aquifer protection zones, earthwork within 4 feet of seasonal high groundwater elevations, and other sensitive environmental areas.
    - ii. Low impact development (LID) techniques considered for this project and an explanation as to why they were included or excluded from the project.
    - iii. Best management practices proposed for this project.
    - iv. Identifying the immediate down gradient waterbody(s) that stormwater runoff from the project site discharges to, EPA's waterbody assessment and TMDL status of the waterbody(s),  
<http://www.epa.gov/region1/npdes/stormwater/ma.html> and  
<http://maps.massgis.state.ma.us/images/dep/omv/il2014viewer.htm>  
and the LIDs and BMPs included in the project to address the pollutant(s) of concern
- (e) Summary of pre and post development peak rates and volumes of stormwater runoff to show no adverse impacts to down-gradient properties, stormwater management systems and wetland resources.
- (f) Conclusions

(3) Plans

- (a) Portion of the USGS Map indicating the site locus and properties within a minimum of 500 feet of project property line.
- (b) Existing conditions and proposed design plans showing:
  - i. Buildings and/or structures including materials, approximate height;
  - ii. Utilities including size, material and invert data; and
  - iii. Regulated wetland resource areas within proximity of the site.
- (c) Stormwater management design plan(s) and details showing:
  - i. Location, size, material, invert data and details for all existing and proposed stormwater management system components including

- structures, pipes, swales, detention, retention, and infiltration systems and any other LID techniques or BMPs;
- ii. Profiles of drainage trunk lines; and
- iii. Drainage easements.

(d) Separate pre and post condition watershed plans indicating:

- i. Structures, pavements, surface vegetation and other ground cover materials
- ii. Topography to delineate watershed areas and cut and fill areas
- iii. Point(s) of analysis
- iv. Watershed areas including upgradient and/or offsite areas that contribute stormwater flow onto the project site, labeled to be easily identified in calculations. Total pre and post watershed areas must be equivalent.
- v. Breakdown summary of various surface conditions by soil hydrologic group rating and cover type.
- vi. Flow path for time of concentration (Tc) calculation.

(4) Calculations

- (a) Hydrologic calculation to determine pre and post peak rates and volumes of stormwater runoff for 1, 2, 10, 25 and 100-year 24-hour storm events.
- (b) Groundwater recharge calculations and BMP drawdown (time to empty)
- (c) Water quality calculations including (if applicable):
  - i. TSS removal calculation for each watershed
  - ii. Specific BMPs utilized in critical areas
  - iii. Specific BMPs utilized for land uses of higher potential pollutant loads
  - iv. Specific treatment for pollutants causing impairment of down-gradient waterbody(s), identified by EPA and MassDEP
- (d) Hydraulic calculations to size drainage pipes, swales and culverts
- (e) Supplemental calculations for sizing LID and BMPs and addressing impairments to waterbodies

(5) Soil mapping and test data

- (6) MassDEP Checklist for Stormwater Report completed, stamped and signed by a Professional Engineer (PE) licensed in the Commonwealth of Massachusetts to certify that the Stormwater Management Plan is in accordance with the criteria established in the MassDEP Stormwater Management Standards, Plainville Stormwater Management By-law and these Regulations.

(7) Any other information requested by the Stormwater Authority.

## Section 9. Erosion and Sedimentation Control Plan

A. The Erosion and Sediment Control Plan shall be designed to ensure compliance with these Regulations, the MS4, and if applicable, (for projects disturbing in excess of one

acre of land), the NPDES General Permit for Storm Water Discharges From Construction Activities. In addition, the plan shall ensure that the Massachusetts Surface Water Quality Standards (314 CMR 4.00) are met in all seasons. Refer to the latest version of the *Massachusetts Erosion and Sediment Control Guidelines for Urban & Suburban Areas* for detailed guidance.

- B. If a project requires a Stormwater Pollution Prevention Plan (SWPPP) per the NPDES General Permit for Storm Water Discharges From Construction Activities (and as amended), then the permittee is required to submit a complete electronic copy of the SWPPP (including the signed Notice of Intent and approval letter) for approval by the Town. If the SWPPP meets the requirements of the General Permit, it will be considered equivalent to the Erosion and Sediment Control Plan described in this section.
- C. The Owner and/or Contractor shall maintain a copy on-site of the Erosion and Sediment Control Plan and/or SWPPP and all other permit documents submitted by the authority. Upon request by the Town, copies of maintenance documents and inspection reports shall be provided to the Town to show compliance with the Erosion and Sediment Control Plan and/or SWPPP.
- D. The Erosion and Sediment Control Plan shall contain sufficient information to describe the nature and purpose of the proposed development, pertinent conditions of the site and the adjacent areas, and proposed erosion and sedimentation controls. The plan shall also describe measures to control construction wastes including but not limited to construction materials, concrete truck wash out and chemicals. The applicant shall submit such material as is necessary to show that the proposed development will comply with the design requirements listed in Section 11 below.
- E. Erosion and Sedimentation Control Plan Content. The Plan shall contain the following information:
  - (1) Names, address, telephone numbers and email of the owner, applicant, and person(s) or firm(s) preparing the plan;
  - (2) Title, date, north arrow, names of abutters, scale, legend, and locus map;
  - (3) Location and description of natural features including:
    - (a) Watercourses and waterbodies, wetland resource areas and all floodplain information, including the 100-year flood elevation based upon the most recent Flood Insurance Rate Map, or as calculated by a professional engineer for areas not assessed on these maps;
    - (b) Existing vegetation including tree lines, canopy layer, shrub layer, and ground cover, and trees with a caliper twelve (12) inches or larger (unless part of a large wooded area, where only the outline is required), noting specimen trees and forest communities; and
    - (c) Habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or of Special Concern, Estimated Habitats of Rare Wildlife, Certified and Potential Vernal Pools, and Priority Habitats of Rare Species within five hundred (500) feet of any construction activity.
  - (4) Lines of existing abutting streets showing drainage and driveway locations and curb

cuts;

- (5) Existing soils, volume and nature of imported soil materials;
- (6) Topographical features including existing and proposed contours at intervals no greater than two (2) feet with spot elevations provided where needed;
- (7) Surveyed property lines showing distances and monument locations, all existing and proposed easements, rights-of-way, and other encumbrances, the size of the entire parcel, and the delineation and number of square feet of the land area to be disturbed;
- (8) Drainage patterns and approximate slopes anticipated after major grading activities (Construction Phase Grading Plans);
- (9) Location and details of erosion and sediment control measures with a narrative of the construction sequence/phasing of the project, including both operation and maintenance for structural and non-structural measures, interim grading, and material stockpiling areas;
- (10) Path and mechanism to divert uncontaminated water around disturbed areas, to the maximum extent practicable;
- (11) Location and description of industrial discharges to be covered by this permit;
- (12) Stormwater runoff calculations in accordance with the Massachusetts Department of Environmental Protection's Stormwater Management Handbook, or the design criteria set forth in Section 11 if more stringent;
- (13) Location and description of, and implementation schedule, for temporary and permanent seeding, vegetative controls, and other stabilization measures;
- (14) A description of construction and waste materials expected to be stored on-site. The Plan shall include a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response;
- (15) A description of provisions for phasing the project where one acre of area or greater is to be altered or disturbed;
- (16) Plans must be stamped and certified by a qualified Professional Engineer registered in Massachusetts, or a Certified Professional in Erosion and Sediment Control (where an engineering license may not required); and
- (17) Such other information as is required by the Stormwater Authority.

F. Design of erosion controls(s) to include the following:

- (1) Minimize total area of disturbance;
- (2) Sequence activities to minimize simultaneous areas of disturbance;
- (3) Minimize peak rate of runoff in accordance with the MassDEP Stormwater Standards;
- (4) Minimize soil erosion and control sedimentation during construction;

- (5) Divert uncontaminated water around disturbed areas;
- (6) Maximize groundwater recharge;
- (7) Design, install and maintain all Erosion and Sediment Control measures in accordance with the latest edition of the *Massachusetts Erosion and Sedimentation Control Guidelines for Urban and Suburban Areas*, manufacturer's specifications and good engineering practices;
- (8) Prevent off-site transport and vehicle tracking of sediment;
- (9) Protect and manage on and off-site material storage areas (overburden and stockpiles of dirt, borrow areas, or other areas used solely by the permitted project are considered a part of the project);
- (10) Comply with applicable Federal, State and local laws and regulations including waste disposal, sanitary sewer or septic system regulations, and air quality requirements, including dust control;
- (11) Avoid or minimize alteration of habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or Of Special Concern, Estimated Habitats of Rare Wildlife and Vernal Pools, and Priority Habitats of Rare Species from the proposed activities;
- (12) Institute interim and permanent stabilization measures, which shall be instituted on a disturbed area as soon as practicable but no more than fourteen (14) days after construction activity has temporarily or permanently ceased on that portion of the site;
- (13) Properly manage on-site construction and waste materials, including truck washing and cement concrete washout facilities;
- (14) Prevent off-site vehicle tracking of sediments;
- (15) Inspect stormwater controls at consistent intervals in accordance with MassDEP Stormwater Handbook; and
- (16) Erosion and sediment controls shall be maintained until site is fully stabilized and authorization for removal is granted by Stormwater Authority.

## **Section 10. Operation and Maintenance Plan**

- A. A standalone Operation and Maintenance Plan (O&M Plan) is required at the time of application for all projects with constructed stormwater BMPs and stormwater management practices. The O&M Plan shall be designed to ensure compliance with the Permit and these Regulations and ensure that the Massachusetts Surface Water Quality Standards (314 CMR 4.00) are met in all seasons and throughout the life of the system. The Stormwater Authority shall require the use of dedicated funds or escrow accounts for development projects or the acceptance of ownership by the town of all privately owned

BMPs. This may include the development of maintenance contracts between the owner of the BMP and the town. Alternatively, the Stormwater Authority may require the submission of an annual certification documenting the work that has been done over the last 12 months to properly operate and maintain the stormwater control measures.

The Owner and/or Contractor shall maintain a copy on site of the Operation and Maintenance Plan and all other permit documents submitted to, or issued by, the Authority. Upon request by the Town, copies of maintenance documents and inspection reports shall be provided to the Town to show compliance with the Operation and Maintenance Plan. The Applicant shall provide copies of the Operation and Maintenance Plan to all persons responsible for maintenance and repairs and the Town upon request.

B. The O&M Plan shall include:

- 1) The name(s) of the owner(s), and person(s) and/or companies responsible for servicing the system, with their contact information including address, work and cell phones, and email, for all components of the system;
- 2) A map showing the location of the systems and facilities including all structural and nonstructural stormwater best management practices (BMPs), catch basins, manholes/access lids, pipes, and other stormwater devices. The plan showing such systems and facilities to be privately maintained, including associated easements shall be recorded with the Norfolk County Registry of Deeds prior to issuance of a Certificate of Compliance by the Stormwater Authority.
- 3) Maintenance Agreement with the Stormwater Authority that specifies:
  - (a) The names and contact information of the person(s) responsible for operation and maintenance;
  - (b) The person(s) financially responsible for maintenance and emergency repairs;
  - (c) An Inspection and Maintenance Schedule for all stormwater management facilities including routine and non-routine maintenance tasks to be performed. Where applicable, this schedule shall refer to the Maintenance Criteria provided in the Massachusetts Stormwater Handbook, or the E.P.A. National Menu of Stormwater Best Management Practices, or equivalent;
  - (d) Instructions for routine and long-term operation and maintenance shall have sufficient detail for responsible parties to perform necessary maintenance activities and prevent actions that may adversely affect the performance of each structural and/or nonstructural stormwater BMP.
  - (e) A list of easements with the purpose and location of each; and
  - (f) The signature(s) of the owner(s) and all persons responsible for operation and maintenance, financing, and emergency repairs, as defined in the Maintenance Agreement, if maintenance is to be performed by an entity other than the owner.
- 4) Stormwater Management Easement(s)

- (a) Stormwater Management easements shall be provided by the property owner(s) to Town, and Homeowner Association (if applicable) as necessary for:
  - i. Access for facility inspections and maintenance;
  - ii. Preservation of stormwater runoff conveyance, infiltration, and detention areas and facilities, including flood ways for the 100-year storm event; and
  - iii. Direct maintenance access by heavy equipment to structures requiring maintenance a minimum of 20 feet wide, or as directed by the Town.
- (b) The purpose of each easement shall be specified in the Maintenance Agreement, signed by the property owner, and approved by the Stormwater Authority or Town Counsel.
- (c) Stormwater Management easements are required for all areas used for permanent stormwater control, unless a waiver is granted by the Stormwater Authority.
- (d) Easements shall be recorded with the Norfolk Registry of Deeds prior to issuance of a Certificate of Compliance by the Stormwater Authority.

5) Changes to Operation and Maintenance Plans

- (a) The owner(s) of record of the Stormwater Management system must notify the Stormwater Authority of changes in ownership, assignment of Operation and Maintenance responsibilities, or assignment of financial responsibility within 30 days after the change in ownership. The owner of record shall be responsible for Operation and Maintenance activities until a copy of the updated Operation and Maintenance Plan has been furnished to the Stormwater Authority and signed by the new owner or any new responsible person.
- (b) The maintenance schedule in the Maintenance Agreement may be amended to achieve the purposes of the Stormwater Management By-law by mutual agreement of the Stormwater Authority and the Responsible Parties. Amendments must be in writing and signed by all Responsible Parties. Responsible Parties shall include owner(s), persons with financial responsibility, and persons with operational and/or maintenance responsibility.

## **Section 11. Performance and Design Standards**

### **A. Design of stormwater management system(s) and components**

- 1) Developments are to be designed to provide for adequate collection and disposal of stormwater runoff from the project site consistent with MassDEP Stormwater Management Standards, or more stringent DPW or Planning Board Standard Details (for subdivisions) if applicable, recognized engineering methodologies and these Regulations with an emphasis to include Low Impact Development (LID) techniques in the design.

(a) LID site planning and design strategies must be implemented unless infeasible in order to reduce the discharge of stormwater from development sites. Infeasible means not technologically possible, or not economically practicable and achievable in light of best industry practices.

2) Stormwater management systems for New Development projects are also to meet minimum requirements of the *General Permit for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts* (MS4 Permit) including removal of 90% of the average annual (not per storm) load of Total Suspended Solids (TSS) generated from the total post-construction impervious area on the site AND 60% of the average annual (not per storm) load of Total Phosphorus (TP) generated from the total post-construction impervious surface area on the site.

(a) Average annual pollutant removal requirements are achieved through one of the following methods:

- i. Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance any federally or State approved BMP design guidance or performance standards (e.g. State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or
- ii. Retain the volume of runoff equivalent to, or greater than, one (1.0) inch multiplied by the total post-construction impervious surface area on the site; or
- iii. Meeting a combination of retention and treatment that achieves the above standards; or
- iv. Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.

3) Stormwater management systems for Redevelopment projects are to meet the minimum requirement of the *General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts* (MS4 Permit) including removal of 80% of the average annual (not per storm) post-construction load of Total Suspended Solids (TSS) generated from the total post-construction impervious area on the site AND 50% of the average annual (not per storm) load of Total Phosphorus (TP) generated from the total post-construction impervious surface area on the site.

(a) Average annual pollutant removal requirements are achieved through one of the following methods:

- i. Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance any federally or State approved BMP design guidance or performance standards (e.g. State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or
  - ii. Retaining the volume of runoff equivalent to, or greater than, 0.80 inch multiplied by the total post-construction impervious surface area on the site; or
  - iii. Meeting a combination of retention and treatment that achieves the above standards; or
  - iv. Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.
- (b) Redevelopment activities that are exclusively limited to maintenance and improvement of existing roadways, (including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems, and repaving projects) shall improve existing conditions unless infeasible and are exempt from Section 11.A.3. Roadway widening or improvements that increase the amount of impervious area on the redevelopment site by greater than or equal to a single lane width shall meet the requirements of Section 11.A.3

4) Off-Site mitigation. For projects where it is not technically feasible to retain or treat the required depth of runoff on-site due to physical site restraints, the Applicant will describe in writing why it is not technically feasible to do so, including which on-site treatment BMPs were considered and why they were deemed not feasible. In lieu of requiring the applicant to meet the standards identified in Section 11.A (2&3), the Stormwater Authority may approve a Stormwater Management Plan that includes off-site mitigation through BMPs that provide *the equivalent retention or pollutant removal requirements in part 2.3.6.a.ii.4 of the MA MS4 General Permit* meeting the following criteria:

- (a) Applicant has demonstrated to the satisfaction of the Stormwater Authority that on-site compliance has been met to the maximum extent practicable.
- (b) Off-Site mitigation shall be located within the Town and the same tributary area to the maximum extent feasible. Under no circumstances will off-site mitigation be located outside the same USGS HUC12.

- (c) The Off-Site mitigation project shall be designed and constructed in a manner consistent with the requirements of the Town Stormwater Management Bylaw and related regulations.
- (d) The Off-Site mitigation project shall remediate the impacts of proposed and existing impervious surface that is not expected to be the subject of Redevelopment in the next five or more years.
- (e) The Stormwater Authority shall, at its discretion, identify priority areas within the watershed in which Off-Site mitigation may be completed.
- (f) Off-Site mitigation provided at a site not owned by the Town, requires a separate Land Disturbance Review and/or Permit as applicable covering the Off-Site mitigation project, the terms and conditions of which, including ongoing operations and maintenance requirements, shall run with the land where the Off-Site Compliance is located.
- (g) Construction of the Off-Site mitigation project shall commence within 12 months of Land Disturbance Permit issuance and be completed within 12 months of commencement.

- 5) Structural BMPs and LID techniques suitable to address TMDLs and/or impairments as listed on MassDEP's most recent *Integrated List of Waters Map* (<http://maps.massgis.state.ma.us/images/dep/omv/il2014viewer.htm>) are to be utilized to the maximum extent feasible. Provide evaluation process narrative with supporting calculations in the stormwater report. Calculations shall include total impervious area and volume of stormwater to be infiltrated and phosphorus loading calculations including reduction through use of LIDs and BMPs. Innovative or alternative technologies may be considered on a case by case / site by site basis.
- 6) Provisions are to be made for the adequate disposal of surface runoff so that no increased flow is conducted over Town ways, or over land not owned by or controlled by the Applicant, unless an easement in proper form is obtained permitting such discharge.
- 7) LID techniques are to be used where adequate soil, groundwater and topographic conditions allow. These may include, but not be limited to, reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain gardens) and infiltration systems.
- 8) Hydrologic calculations, to document that there is no increase in the peak rate and volume of runoff from predevelopment to post development condition, are to be completed utilizing TR-55 and TR-20 methodologies.
- 9) Watershed area for hydrologic analysis and BMP sizing calculations are to include, at a minimum, the site area and all upgradient areas from which stormwater runoff flows onto the site.

- 10) For purposes of computing runoff, all pervious lands on the site are assumed prior to development to be in “good hydrologic condition” regardless of the conditions existing at the time of the computation.
- 11) Length of sheet flow used for times of concentration is to be no more the 50 feet.
- 12) Utilize the 24 hour rainfall data taken from the NOAA Atlas 14  
[https://hdsc.nws.noaa.gov/hdsc/pfds/pfds\\_map\\_cont.html](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html) (or most current data from NOAA) and type III storm.
- 13) Soils tests in accordance with MassDEP Stormwater Handbook to be conducted by a Registered Professional Engineer or Massachusetts Soil Evaluator, performed at the location of all proposed infiltration BMPs and LID techniques, to identify soil descriptions, depth to estimated seasonal high groundwater, depth to bedrock, and soil texture. Evaluate sites for any known contamination issues identified in MassDEP data base <http://public.dep.state.ma.us/SearchableSites2/Search.aspx>
- 14) The design infiltration rate shall be determined from the on-site soil texture and published Rawls rates, or saturated hydraulic conductivity tests.
- 15) As an alternative to #14 above, the Applicant may provide in-situ saturated hydraulic conductivity tests for infiltration systems to receive stormwater runoff. Conduct testing in accordance with Massachusetts Stormwater Handbook and use an exfiltration rate of 50% of the slowest test result.
- 16) Infiltration systems shall not be used for stormwater runoff peak flow or volume mitigation in NRCS soils with an HGR of D.
- 17) Size drainage pipes to accommodate the 25-year storm event and maintain velocities between 3 and 10 feet per second using the Rational Method.
- 18) Size drainage swales to accommodate the 25-year storm event and velocities below 4 feet per second
- 19) Size culverts (passing natural streams or brooks across roadways) to accommodate the 50-year storm event and design adequate erosion protection. Design stream crossing culverts in accordance with the latest edition of the Massachusetts Stream Crossing Standards as promulgated by the Wetlands Protection Act Regulations.
- 20) Size stormwater basins to accommodate the 100-storm event with a minimum of one foot of freeboard
- 21) All drainage structures are to be able to accommodate HS-20 loading.
- 22) Catch basins structures are to be as detailed in DPW or Planning Board Standard Details and spaced a maximum of 300 feet apart in roadways.
- 23) Catch basins adjacent to curbing are to be built with a granite curb inlet as shown in DPW or Planning Board Standard Details.

- 24) Catch basins at low points of road shall be fitted with double grates, and on roads with profile grades greater than 5% shall be fitted with cascade grates or double grates (parallel with curb), as detailed in DPW or Planning Board Standard Details. Additional catch basins may be needed based on flow rates.
- 25) Catch basins are to be routed to drain manhole, water quality structures or outfalls, catch basin to catch basin pipe connections are prohibited unless specifically waived.
- 26) All drainpipes within right of way are to be Class 3 or higher reinforced concrete pipe (RCP) and have a minimum diameter of 12 inches. HDPE pipe may be used on private property, at the discretion of the Stormwater Authority, and should be set at no less than 1% slope unless specifically waived. Special care should be used in handling, bedding and backfill of pipe to prevent UV breakdown and deformation
- 27) Proposed drainage pipes under buildings are prohibited. Existing pipes under buildings are to be relocated.
- 28) Drainage pipes are to be installed with a minimum of 2.5 feet of cover and O-rings.
- 29) Drainage manholes structures are to be as detailed in DPW Standard Details and spaced at a maximum of every 300 feet.
- 30) Outfalls are to be designed to prevent erosion of soils and pipes 24 inches or larger are to be fitted with grates or bars to prevent ingress.
- 31) Drainage easements are to provide sufficient access for maintenance and repairs of system components and be at least 20 feet wide.
- 32) Recommend minimizing permanently dewatering soils by:
  - (a) Limiting grading within 4 feet of seasonal high groundwater elevation (SHGWE);
  - (b) Raising roadways to keep the bottom of roadway section above SHGWE; and
  - (c) Setting bottom floor elevation of building(s) a minimum of 2 feet above SHGWE.

## **SECTION 12. Inspection and Site Supervision**

- A. Pre-construction Meeting. Prior to starting the clearing, excavation, construction, redevelopment or land disturbing activity, the applicant, the applicant's technical representative, the general contractor or any other person with authority to make changes to the project, may be required to meet with the Stormwater Authority, to review the approved plans and their implementation. The need for a pre-construction meeting shall be determined by the Stormwater Authority based on the project scope.
- B. Stormwater Authority Inspection. The Stormwater Authority or its designated agent, which may include the town's outside consulting engineer, shall make inspections as hereinafter required. The inspector shall either approve that portion of the work completed or shall notify the applicant wherein the work fails to comply with the Erosion

and Sedimentation Control Plan, or the Stormwater Management Plan, as approved. The Erosion and Sedimentation Control Plan approved by the Stormwater Authority and associated plans for grading, stripping, excavating, and filling work shall be maintained at the site during the progress of the work. In order to obtain inspections, the applicant shall notify the Stormwater Authority at least two (2) working days before each of the following events:

- (1) Erosion and sedimentation control measures are in place and stabilized;
- (2) Site clearing has been substantially completed;
- (3) Rough grading has been substantially completed;
- (4) Final grading has been substantially completed;
- (5) Subgrade prior to construction of BMP
- (6) During construction of BMPs
- (7) After construction of BMPs
- (8) Close of the construction season; and,
- (9) Final landscaping (permanent stabilization) and project final completion.

C. Applicant Inspections. The applicant or his/her agent shall conduct and document inspections of all control measures as follows:

- (1) Weekly, or more frequently if otherwise specified in the permit;
- (2) Prior to anticipated storm events; and
- (3) Within 24-hours of a storm event equal to or greater than 0.25 inches of rainfall.

(4) The purpose of such inspections will be to determine the overall effectiveness of the Erosion and Sedimentation Control Plan, and the need for maintenance or additional control measures, as well as verifying compliance with the Stormwater Management Plan. The applicant or his/her agent shall submit reports monthly to the Stormwater Authority, or designated agent, in a format approved by the Stormwater Authority.

D. All expenses associated with inspections shall be paid by the Applicant in accordance with the Stormwater Authority policy and procedures.

### **Section 13. Surety**

The Stormwater Authority may require the permittee to post before the start of land disturbance activity, a surety bond, irrevocable letter of credit, cash, or other acceptable security. The form of the bond shall be approved by Stormwater Authority and be in an amount deemed sufficient by the Stormwater Authority to ensure that the work will be completed in accordance with the permit. If the project is phased, the Stormwater Authority may release part of the bond as each phase is completed in compliance with the permit, but the bond may not be fully released until the Stormwater Authority has received the final report as required by Section 14 and issued a certificate of completion pursuant to Section 15.

### **Section 14. Final Reports**

Upon completion of the work described in the Land Disturbance Permit, or Administrative Land Disturbance Review if required, the permittee shall submit a Final Report, including a cover letter and topographic as-built plan, including electronic pdf copy, stamped by a MA Professional Land Surveyor (PLS) and/or MA Registered Professional Engineer (P.E.) as applicable, certifying that the site has been developed in substantial compliance with the approved plan, including all permanent erosion control devices, stormwater management facilities and, any approved changes and modifications. All deviations and discrepancies from the approved plan shall be noted in the cover letter. The as-built drawings must depict all on site controls, both structural and non-structural, designed to manage the stormwater associated with the completed site (post construction stormwater management). The final report shall also include documentation to verify the Stormwater Management System has been properly operated and maintained in accordance with the approved O&M Plan.

## **Section 15. Certificate of Completion**

The Long-Term Operation and Maintenance Plan including the map showing stormwater system components and facilities to be privately maintained, including associated easements, shall be recorded with the Norfolk Registry of Deeds prior to issuance of a Certificate of Compliance by the Stormwater Authority.

The issuing authority will issue a letter certifying completion upon receipt and approval of the final reports and/or upon otherwise determining that all work of the permit has been satisfactorily completed in conformance with these regulations. The Owner shall also maintain copies in its files/records.